Before the Federal Communications Commission
Washington DC 20554

In the Matter of	)
	)
Amendment of Part 97 of the Commission's	) WT Docket No. 16-239
Amateur Radio Service Rules to Permit	)
Greater Flexibility in Data Communications	) RM-11708

REPLY to my Comments in Support of Docket No 16-239
Original Comments: Original Comments submitted with FCC confirmation #20161008286374762 for proceeding on Oct 7, 2016, Proceeding(s): RM-11708, by Steve Waterman, K4CJX

1. Personal Background

I, Steve Waterman, have had an Amateur radio license since 1955. My interest in Amateur radio led me to seek a career as both vice president of an independent telecommunications company, a network design business, and as a vice president for a non-regulated subsidiary of a Bell Operating Company in telecommunications and network design. Currently, in my retirement, I serve as a volunteer for various civil authorities, including county and state governments' emergency management (TEMA), my Homeland Security District Communications Committee, and Federal agency committees such as the FEMA RECCWG and NCC SHARES. Thus, my profession has always been closely related to my hobby and now, my retirement volunteer work.

On the ham side, I have been involved with the Winlink system and software, and its predecessors, since their inception. In my retirement, I currently serve as president of the Amateur Radio Safety Foundation, a 501c3 organization that supports the worldwide Winlink systems and software. I currently also serve as a member of the Winlink development team, and as the worldwide Winlink network administrator for both Amateur radio and government radio activities. I have been a member of the ARRL for over 40 years, and currently serve as an Assistant Director in supporting the ARRL Delta Division Director. I have also served on the ARRL ad-hoc digital committee.

My ***additional*** comments follow:

2. Introduction

I strongly support the FCC's proposal to liberalize the rules for amateur HF digital communications, and wish this document to become an addendum to my

recently submitted comments on the position stated by the Commission regarding RM-11708. After reviewing the range of comments made, I deemed it important to mention the role of Amateur radio in *emergency communications*, a critical component of Amateur radio that is greatly enhanced due to the advancement in data communications throughput, which resulted from hams who have continued to push the envelope in developing new and enabling data systems, and specific to this Docket, their high speed data protocols.

3. Further Discussion to my original comments - Symbol Rate Limits Should Be Abolished with no specific bandwidth restrictions.

Keeping in mind that the majority, if not all, data over 500 Hz is store and forward, and hosts unattended operations, at least, one the receiving end. Peer-to-Peer transmissions of such data are extremely rare. As a result, such store and forward operations, are contained within Part 97.221 Auto sub-bands, which demand spectral efficiencies through advanced techniques, including error correction, of point-to-point ARQ protocols, as well as effective open compression, which I discussed in my original comments Thus, we are referring to the following HF spectrum for all US Amateurs using such protocols:
28.120–28.189 MHz, 24.925–24.930 MHz, 21.090–21.100 MHz, 18.105–18.110 MHz, 14.0950–14.0995 MHz, 14.1005–14.112 MHz, 10.140–10.150 MHz, 7.100–7.105 MHz, or 3.585–3.600 MHz segments.

Keeping these parameters in mind, I wish to elaborate on the history of the Pactor 3 protocol, which has occupied this spectrum with a 2.4 KHz bandwidth for many years. My reference is the Winlink radio email system, which I administer and watch closely.

Although, Amateur radio is not officially an “emergency service,” it continues to play an active and, an important, role both directly and indirectly in emergency communications “97.1(a): Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.”

With the advancement in higher speed data communications throughput, Amateurs on the Amateur radio spectrum have made significant inroads in saving lives and property during disaster events both large and small, and are currently making inroads with their unique HF radio training in assisting civil authorities and their critical infrastructure partners at all levels.

Please now allow me to provide specific examples of my premise that the inclusion of advanced data protocols developed for Amateur radio has made a huge contribution to emergency services for both US Amateur and non-Amateur

operations. Most examples cannot be publicly discussed in order to maintain the privacy and confidentiality of those involved. However, there are a handful of casualty events that have been made public, and these examples fall within this framework.

Example I: Bipartisan Congressional Committee provides the *Failure of Initiative Report.* On September 15, 2005, the House of Representatives approved H. Res. 437, which created the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina. According to the legislation which created it, the Select Committee was charged with conducting "a full and complete investigation and study and to report its findings to the House not later than February 15, 2006, regarding-- (1) the development, coordination, and execution by local, State, and Federal authorities of emergency response plans and other activities in preparation for Hurricane Katrina; and (2) the local, State, and Federal government response to Hurricane Katrina." In March of 2006, the committee released the February report, "Failure of Initiative." Within that report were comments on the activities of Amateur radio, and the report quoted a statement regarding the assistance of Amateur radio to hospitals, the American Red Cross, the Salvation Army, the USCG and others, "Emergency communications were conducted not only by voice, but also by high-speed data transmissions using state-of-the art digital communications software known as WinLink." This reference was work done by those using the 2.4 KHz ODFM protocol, Pactor 3, and all within the Part 97.221 sub-bands. Such operations were all store and forward over Amateur radio to other radio users and to SMTP Internet email offices using the IETF RFCs for standard email. Because the Pactor 3 protocol was restricted by the current 300-baud symbol rate, throughput was limited to 3300 bps. Today, with the advancement made elsewhere, Pactor 4 supersedes Pactor 3, with a maximum throughput of 5500 bps, yet with slightly less bandwidth, but with a symbol rate of approximately1800 baud. Obviously, the benefit of deleting the symbol rate from the equation will continue to develop the radio are in this arena.

Example II: The Sinking of the HMS Bounty. During Hurricane Sandy, the replica of the original HMS Bounty sank more than 90 miles off the coast of Hatteras, N.C. After many communications attempts by Amateur radio SSB voice, Satellite phone, and VHF marine. Although, they did not have the email address for the USCG, the crew finally reached the USCG via Winlink, using the Pactor 3 protocol; to an email for the USCG they had for Facebook. Many email messages were listed in the court case held by the USCG regarding the HMS Bounty. These messages had various recipients and were used as evidence. All such information is listed on the Internet, or may be obtained via the USCG. An article from several ARRL publications quoted Doug Faunt, N6TQS, of Oakland, California, one of the 14 who was rescued by the Coast Guard,
"Faunt told the ARRL that the *Bounty* crew tried various methods, including a

satellite phone, to call for help, 'but we got nothing when tried calling out on HF. We tried calling the Maritime Mobile Net, but nothing was out there. We had *Winlink* on the ship that we used for e-mail and accessing the Internet to post to blogs and to Facebook, and we finally found an e-mail address for the Coast Guard. As a last-ditch effort, we used *Winlink* to e-mail the Coast Guard for help. Within an hour, we heard a C-130 plane, and later, a helicopter overhead." Again, this was made possible by their Captain, who sent a message to the USCG, and many others all on 40 meters, within the Part 97.221 5 KHz allotted sub-band using the 2.4 KHz wide Pactor 3 protocol. The fact that thousands of Amateurs can use such a narrow allotted Part 97.221 HF spectrum with 90-150 watts, is certainly a testimony toward continuance of developing more advanced protocols without the 300 baud symbol rate restriction. Pactor 4 is such a protocol, yet to be allowed within the US Amateur spectrum.

Example III: Although Pactor 4, with its 1800-baud symbol rate is not allowed on the US Amateur spectrum, It must be noted that the US Government, on all levels, uses the Pactor 4 protocol, currently. As one of several examples, the DHS NCC SHARES Winlink Radio Email system, which is supported mainly by Amateur radio volunteers, but supervised by participating agencies, like the Amateur system, has an additional capability to operate *without any* assistance from the Internet. NCC SHARES agency users deploy trained Amateur radio operators to assist with this service. As example, in TN alone, the State and local governments, along with their critical infrastructure partners, use the NCC SHARES system in over 60 county EMA/EMS installations, along with 14 National Guard locations, and multiple locations of the TN DOH, and EMA. Although, this service does not use the Amateur spectrum, it does depend on the experience and expertise of the Ham's familiarity with HF digital radio, which were learned as Amateurs on the Amateur Part 97.221 allotted spectrum. Currently the FEMA Region IV Regional Emergency Communications Coordinating Working Group (RECCWG) has formed a committee that whose objective is to enhance relationships between the qualified Amateur radio operator and their nearby civil authorities in order to recruit and enhance the use of Auxiliary communications volunteers. (See Vol. 5 Issue: 14 July 18, 2016, FEMA RECCWG National Newsletter, Page 7). Finally, It is ironic that those who assist in these services may use such an efficient protocol until they get on their own spectrum, where they must resort to less efficiency with more bandwidth due to the 300 baud symbol rate rule.

5. Conclusion.

With the advancement of digital protocols, and their transmission techniques, the Commission should certainly stick to its guns by eliminating limits on both symbol rate and bandwidth for digital modulation on HF. This can only accelerate the

recent significant advancements made by radio amateurs in developing new, spectrally efficient digital modulation schemes. The amateurs themselves are in a much better position to devise band plans as desired, and to change them to fit varying needs. I spent time with a relatively technical discussion in my initial comments, and felt like this addendum would provide some justification to the Commission's stance. Their current posture is certainly in line with advancing the radio art to a level necessary to maintain the enabling technological levels required in today's digital world.

In addition, the Commission's rules are currently more than sufficient to handle any abuses that may still occur. They do so effectively and efficiently, and with the assistance of the Commission, spectral efficiency can only improve. Regardless, this certainly handles the concerns of Amateurs to police themselves rather than rely on the Commission to do all the work for them, especially during special events and contests using any signal type.

The Commission's existing rules are entirely adequate, particularly the explicit mention of intent in the definition of "encoding" (i.e., encryption) in 97.113 (a)(4) as "for the purpose of obscuring meaning." There is a huge chasm between open compression and encryption. Those who complain that they cannot copy certain protocols must only have the correct hardware and software to do so. Those who cannot copy CW, or have no CW "reader," cannot monitor it effectively. A radio without a product Detector cannot copy SSB, and those who complain about not being able to monitor an open compressed binary format only need the right equipment and software. This emphasis on intent, as opposed to any incidental effect on ease of monitoring by third parties, is crucial. Efficiency improvements made to a radio communications system will unavoidably also make it harder to monitor. This extends well beyond the use of data compression to reduce the number of bits in a message and therefore transmitted energy and spectral occupancy.

Again to quote Phil Karn, "If ease of monitoring were the sole criterion, one could construe even compliance with the mandate in 97.313(a) to 'use the minimum power necessary to carry out desired communications' as an attempt to obscure the meaning of a message by making it harder to monitor! The same would apply to every other practice to minimize interference, e.g. by using directional antennas (and the power reduction they allow) to avoid spraying interference other than toward the intended recipient. Surely that was never the Commission's intention."

The Commission has reached the logical conclusion that deletion of the antiquated and disruptive symbol rate rule is the proper stance to maintain the continuing advancement of the technologies necessary to move the Amateur service forward.

Respectfully Submitted,

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